

PRE-CALCULUS WORKSHEET
SEC. 4.3 APPLICATIONS

NAME _____

SET UP AND SOLVE EACH OF THE FOLLOWING PROBLEMS.

- 1) An airplane is directly above a beacon that is 10,000 ft from an airport control tower. The angle of depression from the plane to the base of the control tower is 6° . How high above the beacon is the plane?

- 2) John views the top of a water tower at an angle of elevation of 36° . He walks 120 meters in a straight line toward the tower. Then he sights the top of the tower at an angle of elevation of 51° . How far is John from the base of the tower?

- 3) What is the angle of elevation of the sun when a tree 6.25 m tall casts a shadow 10.1 m long?

- 4) A boy flying a kite is standing 30 ft from a point directly under the kite. If the string to the kite is 50 ft long, find the angle of elevation of the kite.

- 5) A cable 4 m long is attached to a pole. The cable is staked to the ground 1.75 m from the base of the pole. Find the angle that the cable makes with the ground.

- 6) How far from the base of a building is the bottom of a 30 ft ladder that makes an angle of 75° with the ground?

- 7) From a point 250 m from the base of a vertical cliff, the angles of elevation to the top and bottom of a radio tower on top of the cliff are 62.2° and 59.5° . How tall is the tower?
- 8) A camping tent is supported by a rope stretched between two trees at a height of 210 cm. If the sides of the tent make an angle of 55° with the level ground, how wide is the tent at the bottom?
- 9) The approach pattern to an airport requires pilots to set an 11° angle of descent toward the runway. If a plane is flying at an altitude of 9500 m, at what distance(measured along the ground) from the airport must the pilot start the descent?
- 10) The distance from the point directly under a hot air balloon to the point where the balloon is staked to the ground with a rope is 285 ft. The angle of elevation up the rope to the balloon is 48° . Find the height of the balloon.
- 11) Two observers 1600 m apart on a straight, flat road measure the angles of elevation of a helicopter hovering over the road between them. If these angles are 32° and 50.5° , how high is the helicopter?
- 12) From the top of a 135 m observation tower, a park ranger sights two forest fires on opposite sides of the tower. If their angles of depression are 42.5° and 32.6° , how far apart are the fires?